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New species of *Paracoccus* Ezzat & McConnell, 1956 (Homoptera: Coccoidea: Pseudococcidae) from southern Africa

by

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Paracoccus claudus spec. nov.; *P. larinus* spec. nov.; *P. latebrosus* spec. nov.; and *P. perperus* spec. nov. are described. A key for the separation of the seven species of the genus *Paracoccus* so far known from South Africa and South West Africa is included.

Descriptions are given of four new mealybugs of the genus *Paracoccus* Ezzat & McConnell, 1956. These species all closely resemble the type-species *P. burnerae* (Brain, 1915) with which they may be confused, as has once occurred in the case of *P. larinus* spec. nov.

The characters and composition of *Paracoccus* have been reviewed a few years ago (De Lotto, 1964). To the amendments then introduced to Ezzat & McConnell's original diagnosis a further change has to be made, this time concerning the designation of the frontal cerarius which, following the method proposed by the writer (De Lotto, 1969) is to be referred to as the (xviii), irrespective of the number and arrangement of those preceding it.

Altogether seven species from South Africa and South West Africa are at present assigned to *Paracoccus*. They can be separated by using the following provisional key:

1 Ducts of the oral collar type set in ventral marginal groups on the abdominal segments only . 2
— Ventral marginal groups of oral collar ducts extending as far as the head 3
2 Margin of the body with seventeen pairs of cerarii; multilocular pores arranged in transverse rows on the last five segments of the abdomen ..... **muraltiae**
— Margin of the body with altogether 8 to 14 pairs of cerarii; multilocular pores set in seven groups ..... **perperus**
3 With up to ten ducts of the oral rim type on the marginal area of the dorsum; one of them always associated with the (viii), (xi) and (xii) cerarii 4
— With altogether no more than five dorsal marginal oral rim ducts; none of them associated with the (viii), (xi) or (xii) cerarii 5
4 Ventral oral collar ducts crowded all along the margin of the body, as far as the head ..... **claudus**
— Ventral area adjacent to the (x), (xii) and (xiv) to (xvi) cerarii devoid of any grouping of oral collar ducts ..... **burnerae**
5 Margin of the body with 17 pairs of cerarii; spines of the cerarii anterior to the anal lobes practically all alike in shape and size ..... **larinus**
— With one or more marginal cerarii missing from the thorax; cerarian spines tending to be progressively smaller and more slender anteriorly 6

6 With one dorsal oral rim duct near the preanal (ii) and near the frontal (xviii) cerarius; and one on the median area of the (viii)—and occasionally (vii)—abdominal segment; living on *Acacia* spp. ..... **latebrosus**
— With only one dorsal oral rim duct near the frontal (xviii) cerarius; living on *Welwitschia spp.* ..... **mutabilis**

The type series of all species described in this paper are deposited in the National Collection of Insects, Plant Protection Research Institute, Pretoria.

Paracoccus claudus spec. nov., fig. 1

Mounted young adult females elliptical in outline with the anal lobes poorly developed; dimensions of the graphotype: length 1,2 mm, width 0,7 mm. Margin of the body with altogether seventeen or sixteen pairs of cerarii, inclusive of the frontal (xviii) one; this being due to absence of the preocular (xvii) and at times of the second metathoracal pairs. Anal lobe cerarii each formed with two conical spines, two to four auxiliary setae and a loose group of about 20 trilocular pores; area surrounding the spines not sclerotized. The remaining cerarii are also built up with two spines, except those of the thorax which at times bear one spine only; the ocular (xvi) cerarius which is formed with 3–4 spines; and the frontal (xviii) one which normally has 3. In shape the spines are similar to those of the anal lobe cerarii but smaller. Ventral side of each anal lobe with a moderately sclerotized bar; apical seta 155–180 μ long; subapical one 30–40 μ. Multilocular pores present in five or six groups on the ventral midarea of the abdomen, as follows: (ix plus x) 19–33; (viii) 23–38; (vii) 15–28; (vi) 15–27; (v) 13–24; (iv) 0–3. No multilocular pores occur on the dorsum or on the ventral prosoma. Trilocular pores not numerous and evenly distributed. Ducts of the oral collar type rather abundant and crowded on the ventral lateral margin of the body from the postgenital (ix) abdominal segment as far as the head, but missing on the area adjacent to the ocular (xvi) cerarius; other ducts are associated with the multilocular pores and scattered on the ventral midregion of the thorax. Ducts of the oral rim type few and mostly arranged in a dorsal marginal series from the (ii) to the (xviii) cerarii; altogether from 5 to 10 ducts occur on each side of the body; their average occurrence and distributive pattern is as follows: (ii–v) 0,9; (vi) 0,5; (vii) 0; (viii) 0,5; (ix–x) 0; (xi–xii) 1; (xiii–xvii) 0; (xviii) 1. The dorsal median series is occasionally represented by a single duct on the preanal (viii) segment; several ducts are scattered on the dorsal prosoma. Cephalic and abdominal dorsal ostioles poorly developed; inner lips membranous; outer ones with two or three minute setae and a concentration of trilocular pores. Circulus absent. Dorsal setae few, small and slender; length of the median seta of the preanal (viii) segment 10–15 μ. Ventral setae more numerous and longer; length of the longest submedian seta of the pregenital (viii) segment 40–55 μ. Legs well developed; coxa, femur and tibia of the hind legs with some minute translucent pores; dimensions of L (iii): trochanter plus femur 210–250 μ; tibia plus tarsus 225–265 μ. Anal ring apical, entire, with six setae measuring 75–90 μ in length. Rostrum dimerous, 120–135 μ long. Antennae with eight segments; total length 315–380 μ.

MATERIAL EXAMINED. SOUTH WEST AFRICA. Keetmanshoop: 30. viii. 1967, ♀ holotype and 12 ♀♀ paratypes collected on *Calicorema capitata* (Moq.) Hook. f. (Amaranthaceae) *(J. Munting);* coll. No. H.C. 4350.

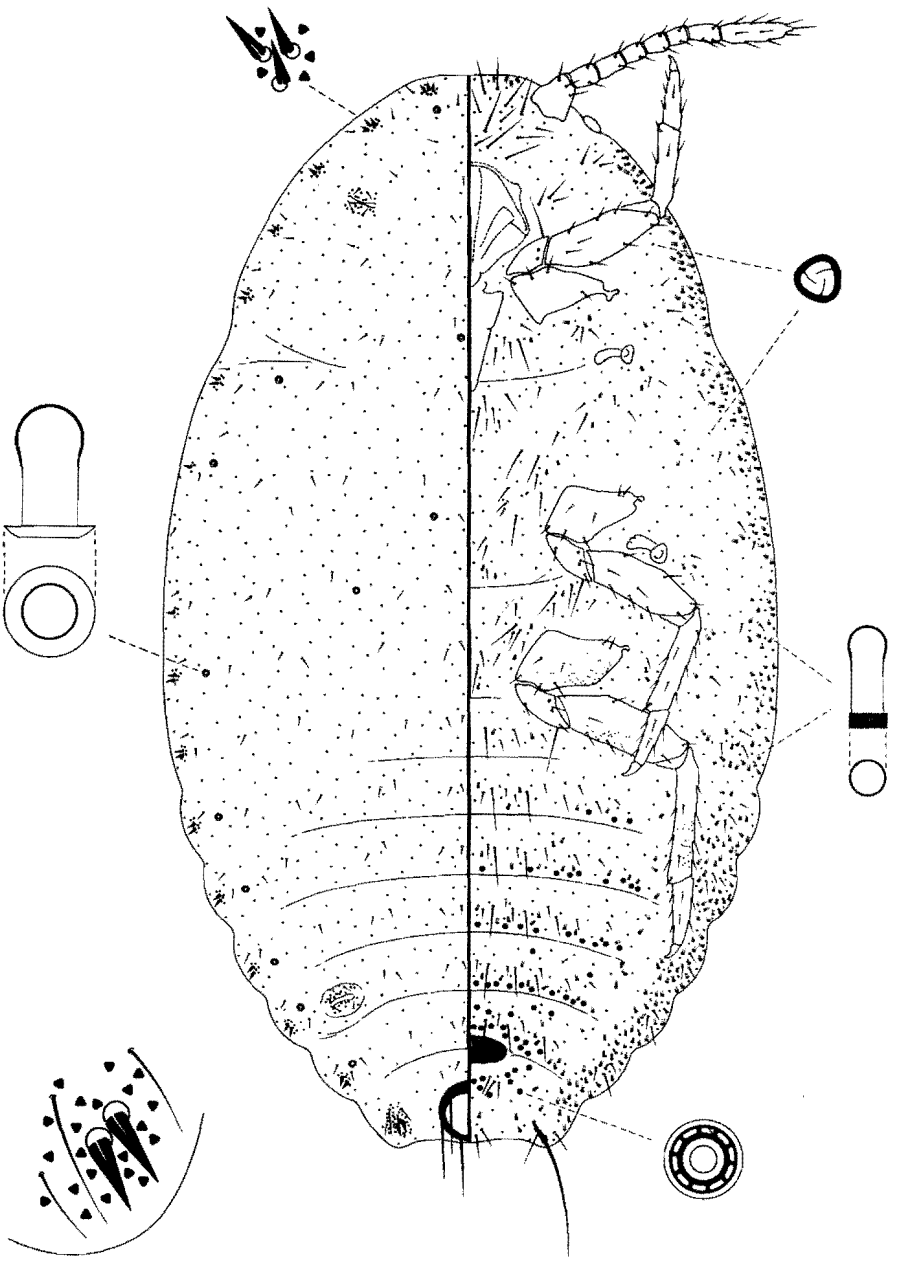

Fig. 1. *Paracoccus claudus* spec. nov.

Paracoccus larinus spec. nov., fig. 2

Pseudococcus burnerae Brain, 1915: 111; *partim.*

Mounted young adult females elliptical in outline with the anal lobes poorly developed; dimensions of the graphotype: length 1,6 mm; width 0,9 mm. Margin of the body with seventeen pairs of cerarii inclusive of the frontal (xviii) one, while the preocular pair is entirely absent. Each anal lobe cerarius is built up with two conical spines, three or four—occasionally five—auxiliary setae and a group of 20–30 trilocular pores; the area besetting the cerarian spines is not sclerotized. The remaining cerarii are also formed with two spines, except the ocular (xvi) and frontal (xviii) ones which may have three, at times four, spines; the spines are smaller than those of the anal lobe cerarii, but all alike, set close to each other and surrounded by a few trilocular pores and with no auxiliary setae. Ventral side of each anal lobe with an elongate, irregularly shaped sclerotized bar; apical seta robust 160–180 μ long; subapical one about 50 μ. Multilocular pores arranged in transverse rows on the ventral midarea of the last seven abdominal segments, as follows: (ix plus x) 17–20; (viii) 35–40; (vii) 24–30; (vi) 21–29; (v) 24–32; (iv) 13–23; (iii) 4–11. Trilocular pores not numerous, evenly distributed. Ducts of the oral collar type crowded along the ventral lateral margin of the body as far as the head, except on the area adjacent to the ocular (xvi) cerarius where they are absent; other ducts are intermingled with the multilocular pores and scattered on the ventral prosoma. Ducts of the oral rim type reduced to one associated with the frontal (xviii) cerarius; occasionally it may be missing altogether. Cephalic and abdominal dorsal ostioles poorly developed with inner lips membranous. Circulus very small, at times lacking. Dorsal setae rather few and small; length of the median seta on the preanal (viii) segment about 15 μ. Ventral setae more numerous and rather robust; length of the longest submedian seta on the pregenital (viii) segment 50–60 μ. Legs all well developed; coxa, femur and tibia of the hind legs with some minute translucent pores; dimensions of L (iii): trochanter plus femur 230–260 μ; tibia plus tarsus 245–280 μ. Anal ring apical, entire, bearing six robust setae 85–100 μ long. Rostrum dimerous, 110–120 μ long. Antennae with eight segments; total length 335–385 μ.

MATERIAL EXAMINED. TRANSVAAL. Pretoria: 28.i.1965, ♀ holotype and 7 ♀♀ paratypes collected on *Sida rhombifolia* Linn. (Malvaceae) *(G. De Lotto);* coll. No. H.C. 959.

To *P. larinus* are referable the specimens ex *Sida dregei* Burtt Davy (=*S. longipes* Harv.) and those ex *Viburnum* sp. which were part of the five lots listed by Brain (1915) in the original diagnosis of *burnerae.* The true identity of the latter should rest on the specimens from *Passiflora edulis* Linn. collected in Pretoria in December 1914 by D. Gunn (coll. No. C.K.B. 66a) which Brain designated types of the species, five of which were used by the writer (De Lotto, 1967) for its redescription.

Paracoccus latebrosus spec. nov., fig. 3

Mounted immature adult females elliptical in outline with the anal lobes poorly developed; dimensions of the graphotype: length 1,2 mm; width 0,8 mm. Margin of the body with altogether eleven to fifteen pairs of cerarii inclusive of the frontal (xviii) one, this being due to the absence of the preocular (xvii) and two or more cerarii from the thorax. Each anal lobe cerarius is formed with two conical spines, three or four auxiliary setae and a rather loose group of 20–30 trilocular pores; the area around the cerarian spines is not sclerotized. The remaining cerarii are also formed with two spines, except

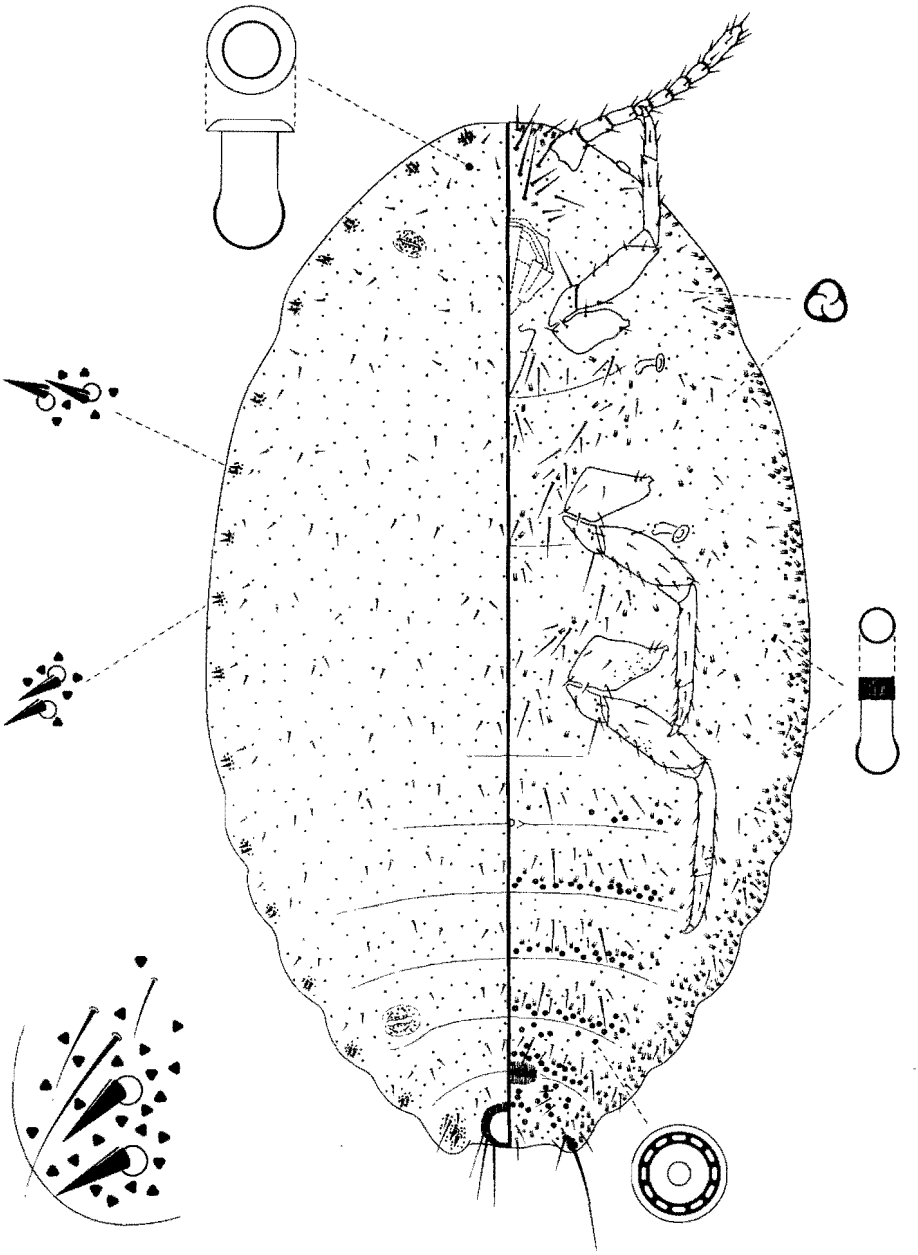

Fig. 2. *Paracoccus larinus* spec. nov.

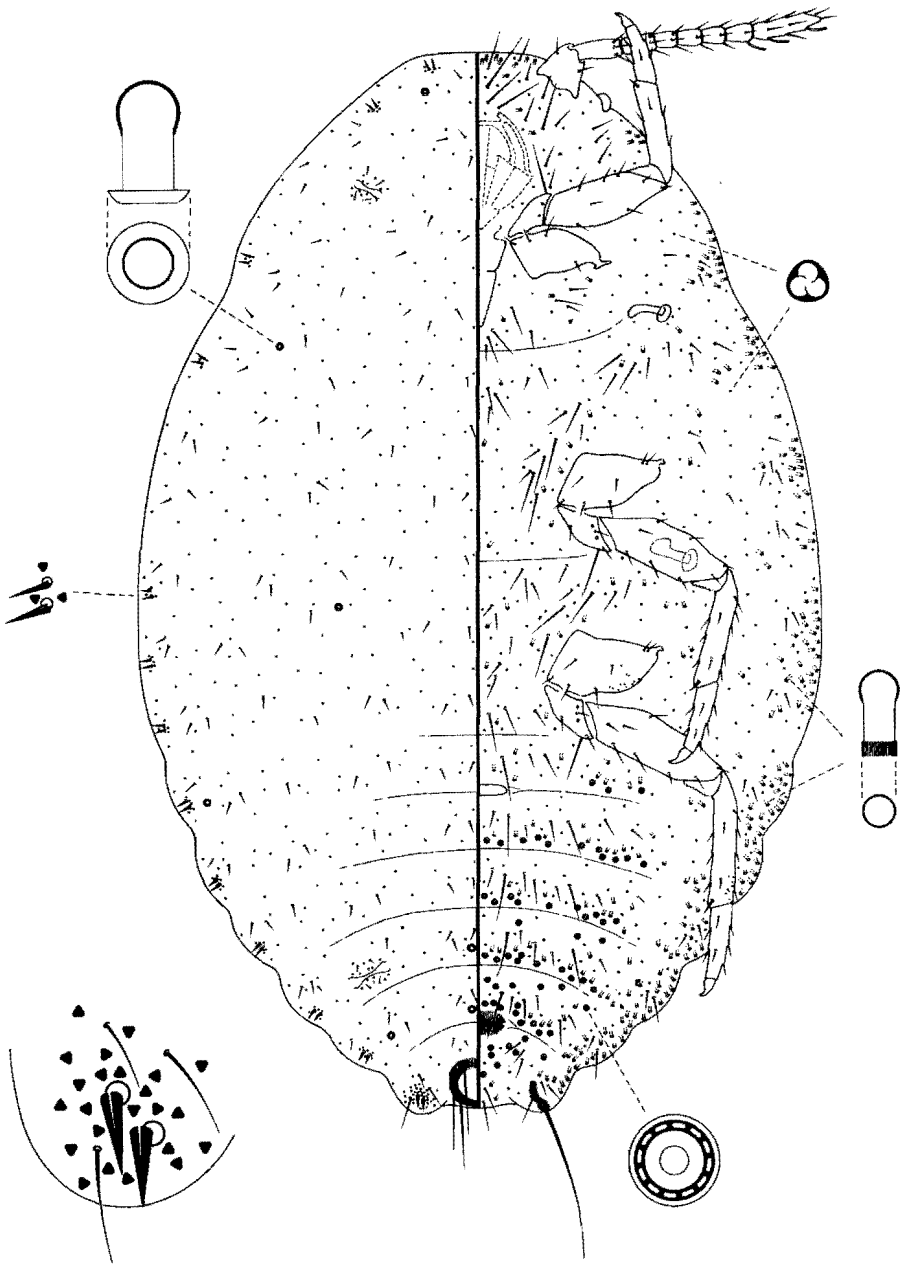

Fig. 3. *Paracoccus latebrosus* spec. nov.

the ocular (xvi) and frontal (xviii) cerarii which occasionally may have as many as three spines, or as few as one spine only. The spines tend to become progressively smaller and more slender anteriorly. Ventral side of each anal lobe with a small, irregularly shaped sclerotized bar; apical seta robust, 160–190 μ long; subapical one about 35 μ. Multilocular pores present in six or seven transverse groups on the ventral midarea of the abdomen, as follows: (ix plus x) 16–21; (viii) 24–31; (vii) 17–26; (vi) 17–22; (v) 16–23; (iv) 3–8; (iii) 0–3. Trilocular pores not numerous and uniformly distributed on either side of the body. Ducts of the oral collar type crowded on the ventral lateral margin of the body as far as the head, but missing on the area adjacent to the ocular (xvi) cerarius; other ducts are intermingled with the abdominal multilocular pores and scattered on the ventral midregion of the prosoma. Ducts of the oral rim type present only on the dorsum, where they tend to be arranged in a marginal and median series. The marginal series is represented by a duct set close to the preanal (ii), frontal (xviii) and occasionally, on the (iv) and (xii) cerarii; the median series is restricted to one duct on the (viii), (vii) and at times (vi) abdominal segments; a few ducts are widely scattered on the thorax. Cephalic and abdominal dorsal ostioles poorly developed with the inner lips membranous. Circulus rather small, transversally elongate, foldable. Dorsal setae small and slender, rather few; length of the median seta on the preanal (viii) segment 10–15 μ. Ventral setae more numerous and longer; length of the longest submedian seta on the pregenital (viii) segment 35–40 μ. Legs all well developed; hind coxae and tibiae with a few small translucent pores; dimensions of L (iii): trochanter plus femur 210–230 μ; tibia plus tarsus 240–250 μ. Anal ring apical, entire, with six setae measuring 85–105 μ in length. Rostrum dimerous, 95–105 μ long. Antennae eight-segmented; total length 300–315 μ.

MATERIAL EXAMINED. TRANSVAAL. Pretoria: 23.ii.1964, ♀ holotype and 6 ♀♀ paratypes collected on branches of *Acacia* sp. (Leguminosae) *(G. De Lotto);* coll. No. H.C. 806.

Besides the type series, all supplementary specimens at hand are from acacias, which suggest a host specificity of the insect for these leguminous plants.

Paracoccus perperus spec. nov., fig. 4

Mounted immature adult females elliptical in outline with the anal lobes moderately developed; dimensions of the graphotype: length 1,5 mm; width 0,9 mm. Margin of the body with altogether 8 to 14 pairs of cerarii. Seven or eight pairs occur on the abdomen; one to four on the thorax; and one on the head. The (x), (xi), (xv), (xvii) and (xviii) cerarii are always absent. Each anal lobe cerarius is formed with two conical spines, a group of about thirty trilocular pores and three or four auxiliary setae; the area around the cerarian spines is not sclerotized. The remaining cerarii of the abdomen are similar to those of the anal lobes, except that they are devoid of auxiliary setae, the trilocular pores are few and the spines are somewhat smaller; the spines of the thoracal cerarii are slender, almost setose and usually set apart from each other. Ventral side of each anal lobe with a narrow, very irregularly shaped, elongate, sclerotized bar in front of the subapical seta; apical seta robust, 180–215 μ long; subapical one 50–65 μ. Multilocular pores present on the ventral side of the last seven abdominal segments, as follows: (ix plus x) 17–27; (viii) 39–54; (vii) 41–63; (vi) 38–67; (v) 42–64; (iv) 21–41; (iii) 3–14. On the segments anterior to the genital opening the pores are arranged in transverse rows which extend to the lateral margins of the body. Trilocular pores fairly abundant on both sides of the body. Tubular ducts of the oral collar type crowded on the

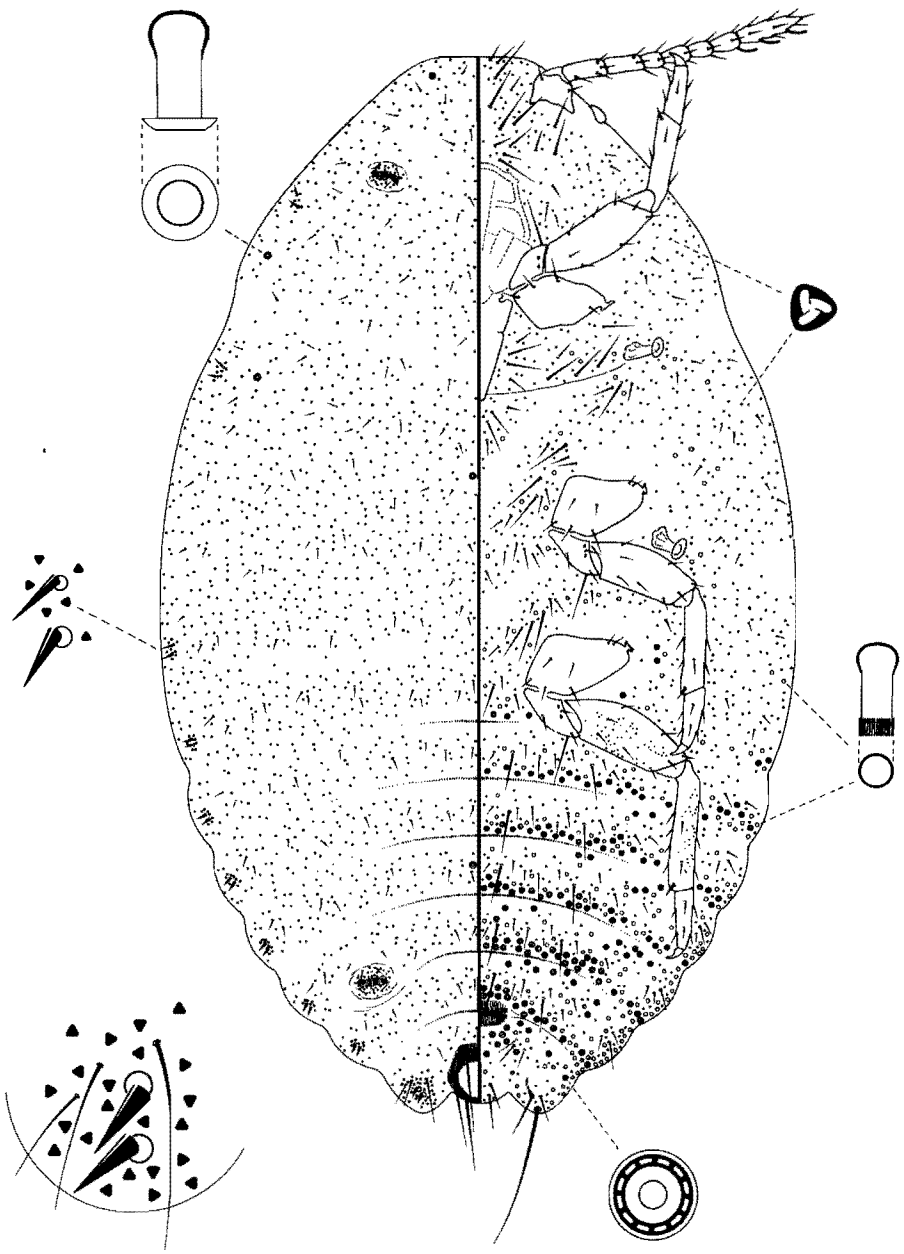

Fig. 4. *Paracoccus perperus* spec. nov.

ventral marginal area of all abdominal segments; others are intermingled with the multilocular pores and scattered on the ventral midregion of the thorax. Tubular ducts of the oral rim type very variable in number, ranging from one to fourteen; all are situated on the dorsum. With the exception of one or two occasionally occurring on the median area of the abdomen, the ducts are scattered on the thorax and head without any pattern. Distributed on either surface of the body are fairly numerous minute dermal structures very likely of glandular nature which, owing to their size and sclerotization, could not be properly studied. Cephalic and abdominal dorsal ostioles rather small with inner lips slightly sclerotized. Circulus lacking. Dorsal body setae not numerous, small; length of the median seta on the preanal (viii) segment about 20 μ. Ventral setae more numerous, longer and rather robust; length of the longest submedian seta on the pregenital (viii) segment 50–60 μ. Legs all rather well developed; hind femur and tibia with numerous small translucent pores; dimensions of L (iii): trochanter plus femur 230–250 μ; tibia plus tarsus 250–265 μ. Anal ring entire, cellular, apical in position, bearing six robust setae measuring 125–140 μ in length. Rostrum dimerous, 110–130 μ long. Antennae with eight segments, total length 335–375 μ.

MATERIAL EXAMINED. CAPE PROVINCE. Stellenbosch: 28.vii.1965, ♀ holotype and 9 ♀♀ paratypes collected on *Anthospermum aethiopicum* Linn. (Rubiaceae) *(V. B. Whitehead);* coll. No. H.C. 1085.

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